49. A New Remarkable Sessile Ctenophore.

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Recently, through the kindness of Dr. H. Hattori of the Biological Laboratory of the Imperial Palace, I had the priviledge of examining some specimens of a strange marine animal owned by the Laboratory, which had been obtained in January, 1941 from Sagami Sea. The specimens, two perfect and five fragmentary, are well preserved and accompanied by careful notes and beautiful color sketches from life by Mr. H. Sanada, assistant in the Laboratory. A glance at the specimens and sketches has enabled me to ascertain that they are of a new and very remarkable sessile ctenophore. As shown in Fig. 1, the animal reminds us highly of *Tjalfiella*, the well-known platyctenid recorded by Mortensen (1912) from the deep water off Greenland. The body is lyre-shaped, flattened, and consists of a saddle-shaped main part or trunk and an arm-like process on either side. In some specimens the distal part of a pinnate tentacle (*t*) projects from the tip of the arm. Thus it is evident that the peculiar shape of the body is due to the considerable elongation of the tentacular axis, in contrast to the much shortened sagittal axis, of a *Coeloplana* like creeping ctenophore, and the bending of the former axis into U-shape, and the folding of the whole body into two along this axis. In size the present form is much larger than *Tjalfiella*. Mr. Sanada's sketches of the specimens in natural size show that, when alive, the whole length was about 14 cm and the width 12 cm. The preserved specimens have smaller dimensions, still the larger specimen is 10.7 cm long, 5.6 cm wide and 1 cm thick. *Tjalfiella*, according to Mortensen, is only 2 cm in its longest diameter.

The preserved specimen is rather firm for a ctenophore, having about the same consistency as that of *Beroë*. The external margin is encircled by a deep furrow (*fu*), the inside of which is homologous with the creeping surface of *Coeloplana*, consequently, the wall of the outer portion of the pharynx of ordinary ctenophores. The furrow is deepest in the middle part of the body, attaining nearly half the height of the latter, while it is one-third to two-fifths the width of the arm. The tentacle sheath opens in this furrow near its distal end. The margin of the furrow, especially the part forming the hem of the trunk, is frilled considerably. The arm bears on each surface four longitudinal parallel fringes (*fr*), the margins of which are more or less serrated. The entire surface of the body shows a corrugated appearance, while the inner side of the furrow is comparatively smooth.

At the bottom of the deepest part of the furrow, around the main axis of the body, occurs an opening leading into the center of the gastrovascular system. The part of the system, directly inside the opening, has a considerably folded wall (*ph. i*). This part obviously represents the inner portion of the pharynx of ordinary ctenophores.

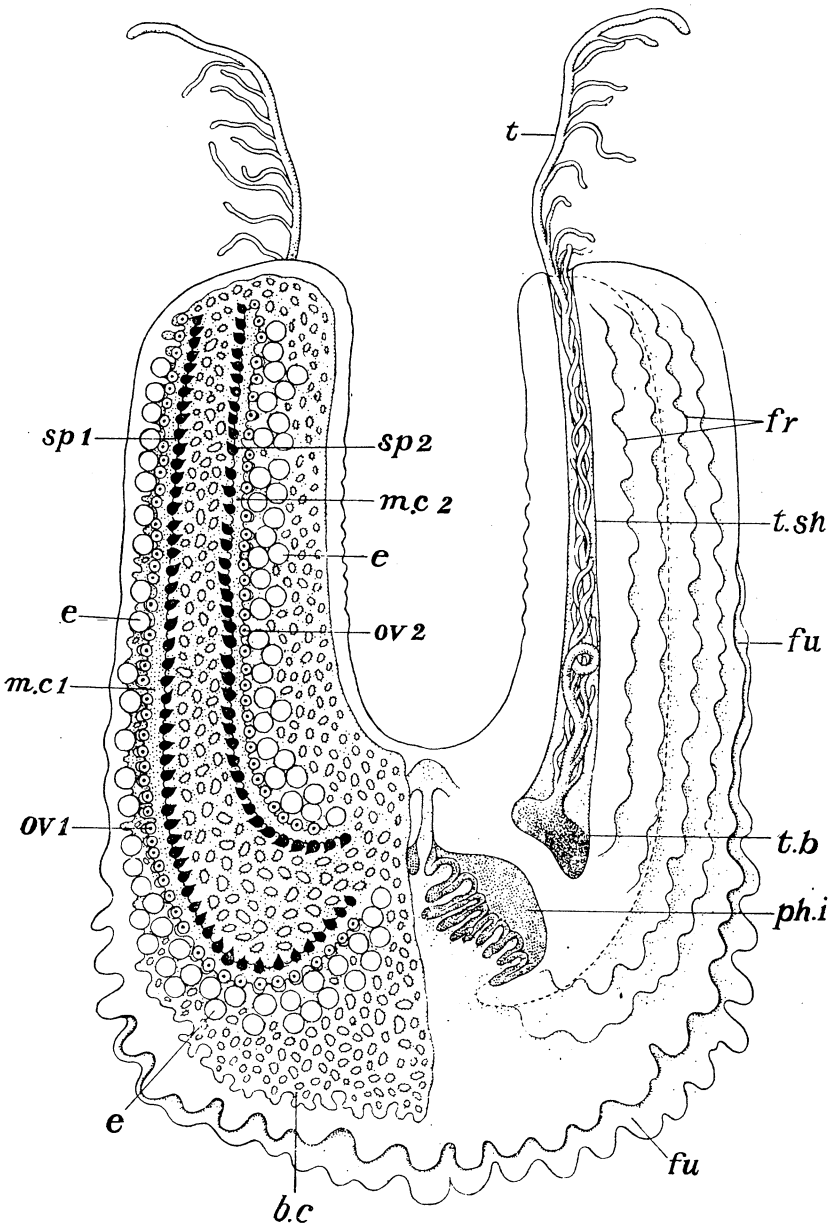

Fig. 1. Semidiagrammatic figure showing the structure of *Lyrocteis imperatoris*, n. g., n. sp., ca. natural size. The canal system, gonads and embryos are shown on the left side, the tentacular apparatus and pharyngeal folds on the right. *b. c* branch canals, *e* embryo, *fr* fringes on the surface, *fu* furrow on the periphery, the broken line shows the depth of the furrow, *m. c 1* subpharyngeal meridional canal, *m. c 2* subtentacular meridional canal, *ov 1.* ovaries along subpharyngeal meridional canal, *ov 2.* ovaries along subtentacular meridional canal, *ph. i* inner portion of pharynx, *sp 1* spermaries along subpharyngeal meridional canal, *sp 2* spermaries along subtentacular meridional canal, *t* tentacle, *t. b* basis of tentacle, *t. sh* sheath of tentacle.

The other pole of the main axis coincides with the lowest point of the saddle-shaped curvature. This is the site of the aboral sense-organ if it occurs, but I have been unable to confirm its presence. From this point as the center, there are eight radiating lines of whitish color, which pass through the tissue directly under the surface. Each line describes an inverted parabola, the portion of the strongest curvature being found between the trunk and the arm. In the latter the two lines run nearly parallel to the margin and between the longitudinal fringes mentioned above. Each line consists of a series of compact pyriform masses which are the spermaries. There are more than 100 of them in each outer (subpharyngeal) row (*sp. 1*) and more than 50 in each inner (subtentacular) row (*sp. 2*). Each spermary mass is provided with a duct leading to the surface of the body. Thus the male gonad of this form is much like that of *Coeloplana* (Komai, 1922) with the only difference that the masses are in much greater numbers.

The spermary rows mark the tracts of meridional canals (*m. c 1, 2*). The canals send out numerous lateral canals (*b. c*) which undergo profuse branchings and anastomoses penetrating the whole body tissue. The spermaries develop in some of these laternal canals iussed on the interradial side of the meridional canal. The ovaries also arise in some of those canals issued on the perradial side (*ov 1, 2*) of the canal. The eggs develop in the body of the mother animal; the corrugated appearance of the surface of the body is largely due to the many developing eggs found directly underneath. Thus the new platyctenid is viviparous like *Tjalfiella*.

The embryos (*e*) are enclosed each within a distinct membrane, and are in various developmental stages. They are very similar to the embryos of *Tjalfiella* described by Mortensen (Fig. 2). The younger stages show little difference from those of ordinary ctenophores. The older stages have characteristic features of platyctenid embryos, namely, the ribs (*r*) are retractile under the general surface of the body, the wall of the inner portion of the pharynx (*ph. i*) is much folded, while the outer portion is considerably enlarged, and the gape of the mouth comes up near the opening of the tentacular sheath (*fu*). In this stage the embryo seems to escape from the mother animal by piercing its tissue. There are many small holes on

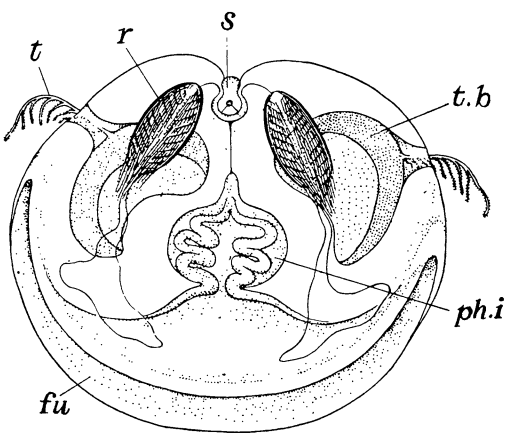

Fig. 2. Embryo shortly before hatching. ×ca. 40. *fu* ventral furrow which is morphologically mouth opening, *ph. i* inner portion of pharyx, *r* rib retracted, *s* sense-organ, *t* tentacle, *t. b* basis of tentacle.

the body surface indicating the traces of the former brood chambers.

The specimens were dredged on January 15 and 18, 1941, from a depth of 70 meters, 3.6 km off Enosima in Sagami Bay. The place which is locally called Hiramon, has a mud bottom scattered with coarse gravel and is close to, or part of, a rich *Metacrinus* ground. Two individuals were caught in the same haul on the 15th, and 5 individuals also in the same haul on the 18th. According to Dr. Hattori, Dr. T. Sato and Mr. Sanada who saw the live specimens, they were extremely soft, translucent, and very beautifully colored showing high individual variation. Two of them were picric yellow, four pinkish with carmine warty prominences, while the seventh was of a milky color. The body scarcely showed any capacity of contraction or extension. The tentacles; however, were greatly extended, and stuck to the hands of the collector.

These observations make it quite certain that the specimens represent a new type of platyctenid which comes between *Coeloplana* and *Tjalfiella*, but somewhat closer to the former than to the latter. I propose to name it *Lyrocteis**) *imperatoris*, n. g., n. sp.

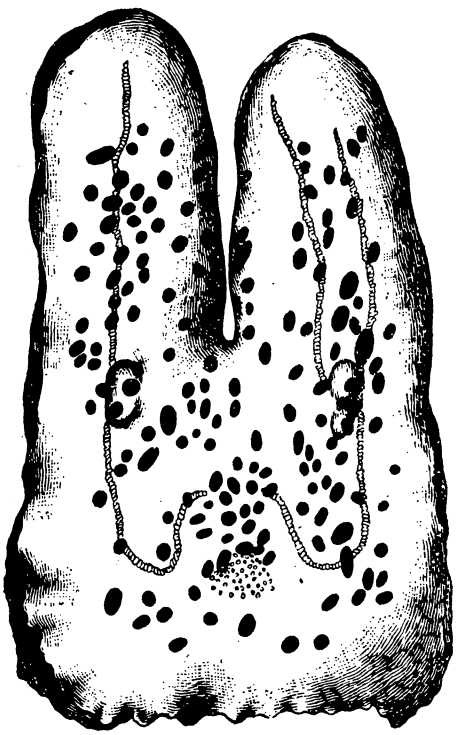

Fig. 3. Reproduction of one of Mr. T. Nishikawa's sketches of *Lyrocteis* on Dobutugaku Zassi, vol. 8 (1896), no. 94, p. 308.

What makes the story of the discovery of this remarkable ctenophore more interesting is the fact that another specimen of evidently this form had been obtained previously from the same Sagami Bay and recorded by a Japanese zoologist, but without any idea of its real nature. In Dōbutugaku Zassi (Zoological Magazine), vol. 8, no. 49, pp. 307–309, issued in August, 1896, we find a short note in Japanese by T. N. (obviously Tōkichi Nishikawa, the inventor of the famous cultured pearl) entitled "A curious animal" with rather good illustrations, one of which is reproduced in Fig. 3. The accounts and figures clearly show that the 'curious animal' was no other than a specimen of the present platyctenid. When it was brought on board the collecting yacht—so the note states—the animal was firmly attached to a stalk of a gorgonid (?) with the edges of the

*) λύρα lyre, κτείς comb.

furrow. Nobody who saw it could tell at that time what it was. The real nature of this form thus remained enigmatic only to be made clear forty-five years later.

Literature Cited.

Komai, T. 1922. Studies on Two Aberrant Ctenophores, *Coeloplana* and *Gastrodes*. Kyoto.

Mortensen, Th. 1912. Ctenophora. Danish Ingolf Ingolf-Expedition. V, 2.